

ABSTRACT

A method of controlling an arc welding system during a welding process is disclosed. The welding process has a plurality of welding cycles
5 in which a consumable electrode is advanced towards a workpiece. The method includes dynamically regulating a rate of advancement and instantaneous melt rate of the electrode during each welding cycle in response to predetermined events occurring during the welding process. The melt rate may be coordinated with the rate of advancement of the
10 electrode to provide a wide range of stable deposition rates with a shielding gas such as CO₂. An arc welding system for carrying out the method is also disclosed.